

Documentation for SMM / LIMS – Project Materials to Final Materials - 16

1. SCOPE

The intent of this chapter is to provide the Region personnel guidance on the materials documentation from the beginning of the project to the closure of the project files when using SiteManager® Materials and the Laboratory Information Management System (SMM/LIMS).. The materials documentation on a project needs to be accurate, complete, and processed within the officially established time frame after the issuance of the project's Final Acceptance Letter per Section 105.21 (b). The Department has stipulated that the Letter of Final Materials Certification (CDOT's Application for Reporting (CAR) Report #473) will be signed by the Project Engineer, the Region Materials Engineer, and the Resident Engineer within 30 calendar days of the project's acceptance to ensure that the quality of the project is maintained and to avoid legal and contractual conflicts.

NOTE: SiteManager® Materials and Laboratory Information Management System (SMM/LIMS): Training Manuals, User Guides, Quick Reference Sheets, and CDOT Superusers Contact Information is available at the following Web Site: <https://sites.google.com/a/state.co.us/sitemanager-materials/> .

2. GENERAL REQUIREMENTS

The procedures referenced are to be followed as indicated for CDOT projects that use electronic documentation. The materials documentation procedure begins at the Materials and Geotechnical Branch in the Documentation Unit with the creation of the *Materials Documentation Record*, CAR Report #250 Quality Assurance and Certification Checklists, and at the Region Materials Laboratory with the review of the Project Independent Assurance Sampling Checklist, CAR Report #379. Final Materials Documentation is to be prepared and reviewed as provided in this chapter. Details on Documentation procedures for individual items are contained in the applicable Sections of this Manual and they cover most situations encountered, but exceptions may require special attention.

3. CDOT PROJECTS – RESPONSIBILITIES & PROCEDURES

The Project Engineer, as the representative of the Chief Engineer, is responsible for Materials Documentation on his Project. The Project Engineer should take measures to ensure that Documentation Procedures of the Department and the Region are followed. All referenced documentation activities within the *Before Construction*, *During Construction*, and *After Construction* sections are the responsibility of the Project Engineer or his designee.

3.1 Before Construction:

NOTE: Verify immediately that the project tester has attended the CDOT SiteManager® Materials Training Class and has received / been granted "access" by the Region's Finals Administrator.

1. Review the Project Plans and check the Project Special Provisions for any modified testing procedures.
2. Review the developed CAR Report #250 Quality Assurance and Certification Checklists. This will enable the Project Engineer to be aware of the types and frequencies of tests that the project quality assurance (QA) tester will be performing.
3. Review the developed CAR Report #379 Independent Assurance Sampling Checklist. This will enable the Project Engineer to be aware of the frequency of the independent assurance (IA) tests that will be performed.
4. Set up the Project Material Books. Ensure that the format is as described in the Organizational Guide for Project Material Books in Section 10.
5. Review the Special Notice to Contractors. Make note of the applicable acceptance level for the materials being incorporated into the project.
6. Ensure items and testing frequencies included in other work are accounted for in the Report #250, the Report #379, or for Pre-inspection. (For example, Structural Backfill has been included with the MSE wall.)
7. Develop list of Pre-inspected Items.
8. Collect submitted list of proposed materials suppliers from the Contractor. Ensure that all steel and iron products permanently incorporated in the work are domestically

- produced in accordance with Section 4 of the Special Notice to Contractors.
9. Evaluate the Contractor's materials suppliers list against the requirements of CP 11, the **Qualified Manufacturers List (QML)**, and the **Approved Products List (APL)** on the web.
<https://www.codot.gov/business/apl>
 10. Identify sources of undesignated materials. Review the CAR Report Project Material Items Report and confirm Producer/Suppliers are entered in SiteManager® and are associated to the Material Codes assigned to the contract.
 11. Set up Random Sampling Schedules (CP 75).
 12. Assure Concrete Mix Design Approval, if required.
 13. Assure Asphalt Job Mix Formula Approval, if required.
 14. Attend pre-pave, pre-pour, and QC/QA meetings.
 15. Schedule and participate in pre-testing meeting. Use CP 16, Pre-Testing Meeting Agenda (CDOT Form #1322), if applicable.
 16. CDOT Forms must be the most recent revisions as referenced in the FMM Appendix and located on the web.
<https://www.codot.gov/library/forms>

3.2 During Construction

NOTE: Detailed information on the distribution of the Report #250, #379 and CDOT Form #211 is presented on pages 8 thru 10.

1. Sample and Test according to the Random Sample Schedule (CP 75).
 2. Ensure that the Engineer and Inspectors have communicated with the QA tester: activities, production, materials or product deliveries, Change Orders (CO), altered quantities, and additional items not considered on the Report #250.
- NOTE:** The Project Engineer needs to communicate the field-adjusted quantities from the COs and the Minor Contract Revisions (MCRs) to the Region Materials Engineer (RME) and the IA Tester and ensure such items are reflected on the project CAR reports
3. Complete on a daily basis the sampling and testing documentation (worksheets, reports and SiteManager® entries).

4. File on a daily basis all materials acceptance documents such as Certified Test Reports (CTRs), Certificates of Compliance (COCs), etc. These documents are to accompany the delivered material to the project.
5. File, within appropriate tabbed sections of the project binder(s) on a daily basis, all completed paperwork.
6. Submit SiteManager® sample ID with the required samples to the Region Materials Laboratory in accordance with the Frequency Guide (QA) Schedule.
7. Submit SiteManager® sample ID with the required samples to the Central Laboratory in accordance with the Frequency Guide (QA) Schedule.
8. Inform Region Materials Laboratory IA Tester of any upcoming IA sampling and testing per the Report #379.
9. Ensure that all required information is reflected on the Report #250 as testing progresses. It is very important to ensure documentation for Added Materials Items, documentation for Deleted Materials Items, summary of Laboratory Check Test Deviations, summary of sampling and Testing Deviations, and Summary of Project Price Reductions are reflected on the CAR Quality Assurance and Certification Checklists at the time this information becomes available.
10. Perform Price Adjustment Calculations prior to Estimates in accordance with Sections 105.03 to 105.07 of the Standard Specifications.
11. Review contract CAR Reports 250 and Certification Checklist to ensure compliance with required testing
12. Make sure Price Adjustments are reflected in the contract reports.
13. On a daily basis keep an updated list of Exceptions to Specifications.
14. Write explanations for each Exception and keep it in the project file as they occur. This will facilitate the completion of the Report #473, Explanation of Exception (Page 2), at the end of the project. Page 2 should be prepared separately from the CAR Report 473 and attached when complete. It is possible to have more than one page of exceptions.
15. Participate in weekly materials testing meetings as necessary utilizing CP 16, Weekly Meeting Agenda (CDOT Form #1323).

3.3 After Construction

NOTE: The project personnel are to review 100% of the Items and materials documents at this time.

1. In each item, sort and arrange all documents within the Project Materials Books sequentially by Sample ID number with relevant worksheets or documents and then by date (most recent first behind the applicable tab) for ease of review. [The first tabbed section will be the documents as referenced in the Table of Documentation Distribution-1 with all of the documents in the order shown. This will not only aid in the closure process but also facilitate the review and audit process.]
2. Verify that any shortages of required tests as indicated on the Report #250 Quality Assurance and Certification Checklists are explained. All discrepancies should be documented in the Explanation of Exceptions (Report 473 page 2)
3. Independent Assurance Tests (IATs):
 - 3.1 Ensure the correct number of tests on the Report #379. Independent Assurance Sampling Checklist. Indicate if Project Basis or System Basis.
 - 3.2 Ensure that IA Witness tests, if performed at all, did not exceed 20% of actual testing for each test element.
 - 3.3 Ensure that Independent (IA) / Acceptance (QA) / Check Test differences are explained.
 - 3.4 Ensure that the Report #473 has a Final Approved By signature of the RME and then has been returned to the Project Engineer.
 - 3.5 Ensure that the Report #473 has a Project Reviewed By signature of the Project Engineer.
4. Make sure all Pre-Inspected items have a CDOT Form #193, when applicable.
5. Make sure there is a brief explanation for material accepted at full price, Percent of reduction in contract price (P) less than 3, is noted on the field form(s) when submitted. NOTE: Reference to P is addressed in Standard Specifications, Section 105.03.
6. Check all Price Reduction Calculations, P greater than or equal to 3.
7. Check explanation for all material repaired or replaced, P greater than 25.
8. Check all of the input values for accuracy on Quality Control / Quality Assurance (QC/QA) projects with incentive/disincentive specifications.
9. Send a copy of the final QC/QA data to the RME and to the Staff Materials Pavement Design Program (QC/QA Manager) on a computer disk or by E-mail. (Personnel Roster is in the Appendix). Verification of receipt by Staff Materials is required to be retained in the file with the QC/QA data. Sent and acknowledgement e-mails required.
10. Complete CP 16, Evaluation of Materials Testing (CDOT Form #1324) as revised in 5-2012 for all consultants.
11. The Project Engineer is responsible for initially developing the *Letter of Final Materials Certification*, Report #473. This includes the Explanation of Exceptions (Report #473 Page 2) which must be included and should have been maintained throughout the project in accordance with *During Construction 3.2*.
12. Prior to the submission of the last Progress Estimate, the Project Engineer shall have all the documentary evidence needed to show that the contractor has complied with the requirements of the Contract Plans and Specifications for all materials used in accordance with the CDOT Field Materials Manual - Quality Assurance Procedures for Construction and Materials Sampling and Testing chapter.
13. Ensure that all required documents from the Contractor have been received: such as: Buy America Certificate, CTRs, COCs, Contractor's COCs, etc. so that upon Final Acceptance the Finals Materials Documentation review and audit process can be completed within 30 calendar days.
 - 13.1 Ensure that the required stamps are applied to the CTRs and COCs, and that they are completed with the applicable information for that material submittal.
14. Collect the Contractor's QC Notebook for HMA and PCCP as per CP 12A and CP 12B respectively.
15. Export or print the CAR Report Checklist – Certification Checklist Report and Checklist – Quality Assurance Sampling Checklist (Report 250) Report and send to the Final Materials Documentation Coordinator as a pdf.

4. INDEPENDENT REVIEW REQUIREMENT FINAL MATERIALS DOCUMENTATION REVIEW

The Region Finals Materials Documentation Coordinator in cooperation with each of the Resident Engineers will distribute the

Materials Documentation to the Region Finals Administrator for their review upon receiving the last Progress Estimate. This review provides a greater degree of independence and critical evaluation. The Finals Administrator or his designee will check the following items.

1. Verify on the Report #250 CAR Quality Assurance and Certification Checklists the total number of tests taken by the QA Tester meet the required tests needed.
2. Verify that any shortages of required tests as indicated on the Report #250 are explained.
3. Independent Assurance Tests (IATs):
 - 3.1 Verify shortages and exceptions are explained.
 - 3.2 Ensure the correct number of tests on the Independent Assurance Sampling Checklist (Report 379).
 - 3.3 Ensure that IA Witness tests did not exceed 20% of actual testing for each test element.
 - 3.4 Ensure that Independent (IA) / Acceptance (QA) / Check Test differences are explained.
 - 3.5 Ensure that Final Material Documentation and Checklist (Report 473) Report has a Final IA Review signature of the RME and a Final Materials Documentation Review signature of the Project Engineer.
4. Make sure all Pre-Inspected items have a CDOT Form #193, when applicable.
5. Make sure there is a brief explanation for material accepted at full price, Percent of reduction in contract price (P) less than 3, is noted on the field form(s) when submitted. NOTE: Reference to P is addressed in Standard Specifications, Section 105.03.
6. Check all Price Reduction Calculations, P greater than or equal to 3.
7. Check explanation for all material repaired or replaced, P greater than 25.
8. Check all of the input values for accuracy on QC/QA projects with incentive/ disincentive specifications. Ensure that a verification of receipt for the final QC/QA data being sent to the RME and to the Staff Materials Pavement Design Program (QC/QA Manager) is on file. Sent and acknowledgement e-mails required. If it is not included in the file then send a copy of the QC/QA data to guarantee that it has been received.
9. Verify the completion of CP 16, Evaluation of Materials Testing (CDOT Form #1324) for all consultants.
10. Verify that the Letter of Final Materials Certification, Report #473 has all required signatures. The Explanation of Exceptions (Report #473 Page 2) is required to be included even if there is nothing documented on it. See the instructions for the Final Material Documentation and Checklist (Report 473) Report to ensure that the Explanation of Exceptions meets the requirements for completeness.
11. As part of the final Progress Estimate, the Project Engineer has included all the documentary evidence needed to show that the contractor has complied with the requirements of the Contract Plans and Specifications for all materials used in accordance with the CDOT Field Materials Manual - Quality Assurance Procedures for Construction and Materials Sampling and Testing chapter. The CDOT Form #325, Final Estimate Data, is to be included in this process. If there is a delay obtaining the Form #325 then it will be included as soon as it is developed and signed.

If the existence of discrepancies or unresolved differences remains, a meeting will need to be scheduled between the Finals Administrator, the project's Resident Engineer, and the Project Engineer.

The completion of the Final Material Documentation and Checklist (Report 473) is required within 30 calendar days after the final acceptance in order to achieve a timely closure of the project and shall have an Approved By signature of the Resident Engineer and the signature of the Project Engineer. The Explanation of Exceptions, Report #473 Page 2 may be edited as necessary; however, the one provided by the Project Engineer must accompany the edited version so that the RE is aware of the changes. The Final Material Documentation and Checklist (Report 473) Report is a requirement for the closure of each construction project.

5.

Table 1. Documentation Distribution
CDOT SiteManager® Project Finals Materials Documentation Packet

Document Order

	Distribution						
	#1	#2	#3	#4	#5	#6	#7
Report #473, Page 1	X	X	X	X	X	X	X
Report #473, Page 2, Explanation of Exceptions supporting documents (letters, CMOs, MCRs, etc.)	X	X	X	X	X	X	X
CDOT Form #325, Page 1 & 2	X	X		X		X	
Final Estimate or last Progress Estimate	X	X		X		X	
Report #250 (Quality Assurance) all pages in pdf format	X	X	X	X		X	X
Report #250 (Certification Checklist Reports) all pages in pdf format	X	X	X	X		X	X
Report #379 all pages in pdf format	X	X	X	X	X	X	X
Random Sample Schedule	X	X	X	X			
Price Reduction Calculation	X	X		X			
QC Data	X	X		X			
QA Data		X	X	X			
Evaluation of Materials Testing, CDOT Form #1324 (per CP16)	X	X	X	X		X	X

Distribution:

#1	Resident Engineer	Original
#2	Project Engineer	Copy (Only if requested)
#3	Region Materials Engineer	Copy
#4	Region Finals Administrator	Copy
#5	FHWA (Oversight Projects Only)	Copy
#6	Documentation Unit, Staff Materials & Geotechnical Branch	Copy
#7	Records Center	Copy

6. CDOT FORM #211 – Completion Instructions [Materials Documentation Request]

The Final Materials Documentation Project Closeout and the Final Materials Documentation Review or Audit activities will discover that occasionally required documents will be missing. Individuals performing the closeout, review, or audit should use this form or comparable e-mails to allow for a paper trail in the effort to obtain the missing documents. The original project personnel may have misplaced or lost a field materials worksheet or report. The Contractor may have not forwarded required COCs or CTRs. Because time is critical, always indicate a due date and follow through immediately if that date has passed. If e-mail queries are being used, write on the "Subject:" CDOT Materials Documentation Request or CDOT Form #211. Staple the resolution Form #211s or e-mails to the Final Material Documentation and Checklist (Report 473).

NOTE: The Report #250, #379 and #473 that have been referenced are integral to the Materials Documentation process, both at the project level and at the review and audit level. Therefore, the subsequent explanation of each of the form's requirements is addressed at this point.

7. Quality Assurance and Certification Checklists (Report 250) – Review Instructions

The Project Engineer is responsible for the initial review of the Quality Assurance and Certification Checklists (Report 250) and contacting the Staff Materials & Geotechnical Branch if there is a problem with the form. Ensuring the proper review of the Report #250 and then applying the signature on the Final Material Documentation and Checklist (Report 473) is the Project Engineer's responsibility. If a consultant tester is utilized on the project a professional engineer with the consulting company must sign and place his PE stamp on the last page of the Quality Assurance and Certification Checklists (Report 250).

Review of the completed Report 250 will include the following as substantiating documentation and shall be included on the Final Material Documentation and Checklist (Report 473) Report page 2:

1. Ensure Quantities added by Change Order(s) are reflected on the Report 250 "Total Plan + CO Quantity column.
2. Documentation and inclusion of Quantities not listed separately in the Bid Schedule (e.g. – quantities included in Lump Sum Items, etc.).
3. Verification that minimum testing frequencies have been accomplished.
4. Explanation of Exceptions for Material Specification Deviations.
5. Documentation of Exceptions, for comparison differences between Quality Assurance (QA) Test results and Independent Assurance (IA) Test results.
6. Documentation of Exceptions for Price Reductions when P is greater than or equal to 3. Specification deviations that have a price reduction factor (P) of less than 3 require that the exception be noted on the submittal sheet referenced in the Field Materials Manual – QA Schedule. A copy of the calculations is to be attached.
7. Documentation of Exceptions for remedial action when P is greater than 25.
8. Documentation of Exceptions for an insufficient number of tests.

NOTE: If the Guidelines for Test Frequency Reduction are utilized then reference it specifically, do not just state "waived by the Project Engineer".

9. Documentation of Exceptions for a lack of tests for Items included in Lump Sum Payments.
10. Documentation of Exceptions for a lack of tests for Items included in extra work.

Distribution:

Note: Submit the entire completed copy, not just the first and last page.

8. Report Independent Assurance Sampling Checklist (Report 379) Completion Instructions

The Project Engineer is responsible for ensuring that the Region Materials Engineer's IA Staff are kept informed throughout the course of the project. The QA Procedure Chapter, Subsection 7.5.1.2 and throughout Subsection 7.9.4 describes the exact responsibilities that the Project Engineer has with regard to the Independent Assurance Sampling Checklist (Report 379).

The Region Materials Engineer will assign an individual from the Region Materials Laboratory to review and update the, Independent Assurance Sampling Checklist (Report 379). The Region Materials Engineer, or his designee, may perform a review prior to distribution to the Project Engineer (i.e. after the project has been activated in SiteManager®). When all of the IA sampling and testing on the project is completed, the RME will certify it through his Final Approval and then forward the signed Final Material Documentation and Checklist (Report 473) to the Project Engineer.

Review of the CDOT Report #379 will include:

1. An Explanation of Exceptions attached to the Report 473 for comparison differences between Quality Assurance (QA) Test results and Independent Assurance (IA) Test results, as defined in Section 7.9 of the QA Procedures chapter.
2. An Explanation of Exceptions for an insufficient number of tests.

9. REPORT #473 – Checklist – Final Material Documentation and Checklist Completion Instructions Page 1 & 2]

The Project Engineer is responsible for ensuring that the CDOT Report #473 is initiated in SMM. This includes the Explanation of Exceptions (Report #473 Page 2) which should have been maintained throughout the project. The Project Engineer applies the first Approved By signature to the form because it is his project

and he would be aware of all issues associated with his project. The Resident Engineer for the project applies his signature under Approved By on the Report #473 because of his ultimate responsibility and authority. He may edit the Explanation of Exceptions (Page 2) as necessary, after the completion of the Final Materials Documentation Review.

Explanation of Exceptions (Page 2):

[Examples only, not all inclusive.]

- Missing documents such as CTRs, COCs, Buy America, etc.
- Section 7 (Report #250) and Section 8 (Report #379) have specific Exceptions that should be placed in this document.
- Summary of Laboratory Check Test Deviations, Summary of Sampling and Testing Deviations, and Summary of Project Price Reduction Documentation may be attached to fully document what transpired on the project.

Completion of the Report #473 will include:

1. The creation of Explanation of Exceptions is a compilation of recorded and documented explanations from throughout the project.
2. All CDOT forms and documents are assembled in the required order stipulated in Table 1. These are to be physically attached with pages stapled together as much as is possible or with binder clips if necessary.

10. ORGANIZATIONAL GUIDE FOR PROJECT MATERIAL BOOKS

SCOPE

The Field Materials Manual includes the "QA Frequency Guide Schedule for Minimum Sampling, Testing, and Inspection". This is the essential document to use when determining which CDOT forms to use as worksheets, which CDOT forms to collect as test reports, and what materials acceptance documents are required.

Utilize this Organizational Guide for Project Materials Books in both initially establishing the binders and maintaining them throughout the project. It is not inclusive of every materials item, but it references the primary items that you will encounter. Follow the item numbering in sequential order to aid in locating project paperwork. Check Project Specials and Project Standard Revisions for additional paperwork that may be required.

The Materials Books need to be marked on both the cover and on the spine to indicate which item numbers are inclusive within the book. No exceptions! Each bullet represents a subsection within the item and therefore needs to be properly divided. Sheet dividers or tabs properly identified will help to delineate the paperwork for ease in locating forms used as worksheets and test reports. Place the most recent or newest documents behind the applicable tab.

Projects using SiteManager® Materials and Laboratory Information Management System (LIMS) should follow this guide. For sample and testing information recorded in SiteManager® Materials and LIMS, list the SiteManager® Sample IDs in each section.

Core Project Documents: The required filing order in the first book is established to mirror the Project Finals Materials Documentation Packet.

- Report #473, Final Material Documentation and Checklist Page 1 & Page 2.
- Progress Estimates (from the first through to the Final Estimate).
- Report #250 Quality Assurance Sampling Checklist and Certification Checklist Report from CAR in its entirety, even though a copy may be divided with the respective item pages within each tab.
- Report #379 Independent Assurance Sampling Checklist.
- Random Sample Schedule(s). *
- Price Reduction Calculation (copies).
- QC Data. *
- QA Data. *
- Buy America Certificate(s).
- SiteManager® Pavement Structural Design Data
- CDOT Form #1324, Evaluation of Materials Testing (per CP 16).
- Field Lab & Personnel Qualification Checklist (per CP 10).

* Random Sample Schedules need to be clearly marked for the item number and the testing element.

* Random Sample Schedule copies and QC/QA Data copies should be filed with the applicable item.

203 Embankment

- Soil Classification (Form #564) / Curves (Form #24) / Computer Moisture / Density with rock correction printouts with curve numbers on it.
Each curve will have all of the above stapled / attached together. Make an extra copy of the computer moisture / density curve to go with the gauge book.
- Soil Classifications (Form #564s) for your completed roadway soil survey data. (1 per 1000 ft. or change of soils.) Get these tests done as fast as you can so they can be submitted for an R-value in case there is a stability problem.
- Form #212s (Densities) – with the field test worksheets (in chronological order by date and test number) stapled / attached to this. Make sure your classifications match what is on your computer moisture / density curve. Project Engineer must sign this form when it is completed. You do not wait to the end of the project to fill this out. This form can be filled in and submitted weekly, bi-weekly, monthly, or however the Project Engineer may want this information to be submitted for signature. Communication between you and the Project Engineer is very important.
- Form #219 – completed Roadbed Soil Survey. You fill this in from the test results you receive from the samples submitted to the Central / Region Laboratory for an R-value to complete your soil survey. Attach the test results from the Lab to the corresponding sample ID number. Note: For faster R-value results, attach a copy of your Form #564 (soil classification) that you completed above for that sample. When this is completed, sign it and have it signed also by the Project Engineer. Then submit this to Region Lab, as soon as possible, for final approval. You will get a signed copy back, when it is approved, for your file.
- Sulfate testing for preliminary roadway soil survey data (1 per 1000 ft. or change of soils) will use the preliminary soil survey Form #555. Soils sampled for sulfate testing will be identified for each soil layer and boring on this form. Additional information will be submitted identifying the test bore number, number and type (soil or water) of tests being submitted. The completed soil survey will include the sulfate percentage for each sample submitted.
- Sulfate testing for imported embankment (1 per 2000 yd³ or change in soils) will use the Laboratory Report on Item 203 (Embankment or Borrow).
- Corrosion tests for pipe material type selection will be submitted on the Form #555 identifying the test bore or location number, number and type (soil or water) of tests being submitted.

206 Structural Backfill**Class 1**

- Sample submitted to Central / Region Laboratory for a gradation compliance check and a moisture / density curve.
- (Gradations) Form #6s that have the field gradation test worksheets (Form #565s) stapled / attached that are represented on that form in chronological order by test number and date.
- (Density) Form #6s that have the field density worksheets (Form #427s) stapled / attached that are represented on that form in chronological order by test number and date.

Class 2

- Classification (Form #564) / Curve (Form #24) / Computer printout of Moisture / Density Curve with rock correction.
All of this needs to be attached together with a Curve number on it (if there are several curves). Make an extra copy of the computer printout to go in the gauge book.
- Form #212 (Densities). Same as per Item 203.

Flow fill

This stays in project records. Keep batch tickets.

Filter Material or Bed Course

You only need the Form #6. Attach field test sheets (Form #565s) to this form and get it signed by the Project Engineer.

Form #194

Structural Backfill Density Report is a summary to be filled out at the end of the project when you have the correct number of cross pipes / side drain pipes / minor structure / and major structure with their quantities broken out by the type of backfill. You will get this data from your Project Engineer, as well as the Project Plans and As-Built.

Item 207

You will need to have a section for the test results to delineate if it was a Contractor's Source, and this documentation should be accompanied by the Certified Test Reports (CTRs) the Contractor should submit with samples of the material. Check and document that the one the lab used was the one approved for use.

Item 208

You should file a COC or CTR for each of the items that you are documenting. Silt fence, Erosion Bales, and the Miscellaneous Items that were used. Make sure the materials have the proper documentation, and if applicable are on the Approved Products List (APL). It is helpful to print the applicable Form #595 with the information on the product found on the APL.

Item 209

You should document if the Landscaping water used was potable, or if a CTR was submitted and approved for use.

- If Magnesium Chloride is used for a Dust Palliative, file the Certificate of Compliance (COC) behind it.
- If an Asphaltic material was used for a Dust Palliative, follow Item 403/411 requirements, and document.
- Embankment Moisture Control should be documented per specification.

Item 212

You should have separated areas for the seed, sod, and fertilizer. File the COCs documenting the quantities approved and that each meets CDOT Standards. Make sure you have copies of the Seed tickets filed behind the COC. Fertilizer should meet requirements of Standard Specification Subsection 212.02.

Item 213

There should be separate sections for Wood Cellulose, Mulch Tackifier, and Straw or Hay used.

- Wood Cellulose Fiber should be accompanied by a COC.
- The Mulch Tackifier should be accompanied by a COC.
- Straw and Hay should be accompanied by a COC stating material is "Weed Free."

Item 214

You need separate sections for Plants, Humus, and Fertilizer.

- Plants are accepted by COCs and file COC.

- Humus are approved by HQ Staff Landscape Architect. Document and file any paperwork given by HQ.
- Fertilizer should be accepted by COC. File with #157 stating material meets requirements.

Item 215

- Plants are accepted by the Right-Of-Way Engineer, document his acceptance.
- Fertilizer should be accepted by COC. File with #157 stating material meets requirements.

Item 216

Soil Retention Blanket should be located on the APL, document and file APL document. It should be weighed, and measured, and document that the material is acceptable.

Item 217

This material is accepted by Staff Landscape Architect, document their acceptance and any paperwork from HQ.

Item 304

- Samples sent to Central / Region Laboratories for R-value, Moisture / Density curve, gradation verification, LA Abrasion, etc. Follow "QA Frequency Guide Schedule for Minimum Materials Sampling, Testing and Inspection."
- Form #6 (Gradations / Atterberg Limits) with the attached field test worksheets attached to this form. Project Engineer needs to sign this form.
- Form #6 (Densities) with the attached field test worksheets attached to this form. Project Engineer needs to sign this form.

The above section applies to all types of aggregate base courses (ABC). If you have several different types of ABC you need the three (3) sections for each type.

Item 306

Follow Item 203 requirements for documentation for this item, follow Schedule of Item 306 for frequency of tests needed.

Item 307 Hydrated Lime

- Document for each shipment (one per source, 1 per 100 ton, 2nd 100 ton, etc.).
- Keep shipment invoices listing "Date, BOL / COC number, tons shipped, and accumulative total". This will help you know when to ship the samples you took per truck represents 100 tons or fraction thereof for testing. Basically, every 4 samples (1 per truck @ 25 tons per truck) you need to ship all of this to the Central Lab.

Item 307

There should be separate sections for the following:

1. Lime Treated Sub-Grade
 - a. Density reports on the Form #212.
 - b. Document the Moisture Density Curves, (copy of curves should be kept in Nuclear Gauge book for field use).
 - c. Section should be kept for "depth" of lime treatment measurements.
 - d. Check schedule for lime samples to be submitted to HQ for testing.
2. Quick Lime

- a. CTRs documenting percent purity, source, and supplier. See “Notes” under this item for calculations.
3. Mineral Fillers
 - a. Document gradations on Form #6.
 - b. Submit samples to Central Lab for testing every 500 tons.
 - c. Document the Source, Supplier, and any other required information or other documents required by provisions.

Item 308

1. Portland Cement Treated Base
 - a. Densities should be recorded on Form #6.
 - b. Gradations should be recorded on Form #6.
 - c. Atterberg Limits should be recorded on proper forms and worksheets and filed.
 - d. Moisture and Density Curves should be filed for each blend of soil and Cement.
2. Portland Cement and Fly Ash
 - a. Product must be on the APL. Print the information and file that the product is acceptable.
 - b. If the Engineer requested Bill of Lading and CTRs from supplier. File results.

Item 310

Document as per the Project Contract.

Item 403 HMA

- Form #43 (In this tab, file supporting documents of mix design from the private lab, CDOT Form #429, and Central Lab CP 52 results).
- Asphalt Content Gauge (Include Stat and Drift Test & CDOT Form #772). Not needed if Ignition Oven used on Quality Assurance tests.
- Correction Factors Asphalt Content Gauge or Ignition Oven Correction factor. Moisture Density correction factor Form #469 of equivalent, and supporting documentation.
- Check Tests Include QA and QC results, and report passing/failing.
- Random Schedules.
- Verification Test Results.
- Quality Assurance Result (Voids 03 or Asphalt 03)
 1. QPM Report
 2. Asphalt Content or Voids include Form #1304's, #106's,
 3. Gradation
 4. Mat Density
 5. Joint Density
- Micro-Deval
- Hydrated Lime
- Rut Testing

Repeat the same bookkeeping organization for the top mat of HMA. These need to be separated especially if it is with a different asphalt binder.

405 Hot-In-Place Recycle

- Document in-place densities on Form #69 or computer generated report, and a specific gravity test result for each density on Form #69.
- Asphalt Rejuvenating Agent, follow Item 411 requirements.

406 Cold Bituminous Pavement (recycle)

- In-place densities should be reported on Form #69.
- Gradations should be reported on Form #6.
- Free moisture should be documented on applicable forms, suggest using Form #6.
- Hveem Stability and Lottmans should be documented.
- Asphalt Rejuvenating Agent and Asphalt Emulsion should follow Item 411 for documentation.

408 Joint and Crack Sealant

- Hot Poured (HMA only)
 - Document that material is on APL, file APL review sheet. ENSURE BATCH NUMBERS MATCH!
- Silicone (PCCP only)
 - Document that material is on APL, file APL review sheet.

409 Seal Coat Material

- Submit samples per Field Materials Manual to Central Lab, and file results used to submit samples.
- Report Gradations on Form #6.
- Report Fractured Faces on Form #6.

411 and test results Asphalt Binders and Emulsions

- Keep a Bill of Lading / COCs daily total of all material shipped with a running accumulative total, just like you do for Item 307.
- Forms #411. (Separate the Form #411 by type of binder if you have several on the project.) Even if you do not ship in a sample (i.e., like emulsion, and it is pre-approved), you still need to put the quantity on the correct form number for that item.

412 Portland Cement Concrete Pavement

Follow frequency outlined in the Project Documents and the Field Materials Manual. Review Item 601 for areas of commonality. Have separate sections as listed below:

- Form #1373, Concrete Mix Design Report.
- Air Contents, temperatures, yields, slumps, and water cement ratios should be recorded on Form #156. This should be signed by Project Engineer as soon as reasonable to keep him/her up to date with test results.
- Compressive and Flexural Strengths results should be filed behind the Form #82s that samples were turned in with for testing.
- Sand Equivalent test results should be filed.
- Pull Test for Tie bars (if applicable) should be filed.
- Texture and Saw Cut Depth test results should be filed.
- Pull Tests for Joint Sealants should be reported on Form #389.
 - Note: Flexural strengths conducted by Contractor should be filed.
- Portland Cement, follow Item 308 requirements.
- Joint Sealant, follow Item 408 requirements.
- Contraction Joint Plastic Strip: Field inspect and document that product is acceptable.
- Reinforcing Steel, Dowels, Tie Bar: follow Item 602.
- Provide MIT Report.
- Smoothness.
- Other Items not listed, document as necessary.

420 Geosynthetics

- Geosynthetics, which includes Geomembranes, are accepted by COC. File copies stating material is acceptable and note that batch numbers match.
- Geotextiles are located on the New York State Approved Products List. Cross reference this list and document stating material is acceptable and note that batch numbers match.
- Geogrids are accepted on a project by project basis. Geogrids that are used in conjunction with MSE walls need to be reviewed by Staff Bridge Design & Management Branch for acceptability. Geogrids that are used in conjunction with embankment and roadway need to be reviewed by the Soils & Geotech Program of the Staff Materials & Geotechnical Branch for acceptability. Document stating material is acceptable and note that batch numbers match.
- When Performance Graded (PG) Binders or Asphalt Cement is used, follow Section 411 requirements.

501 Steel Sheet Piling

- Sheet Piling is accepted by COC and Mill Tests Reports. File copies stating that the materials meet the specifications, and list the heat numbers, reference the mill test reports that are attached, and that the material is acceptable for use.
- Reinforced Sheet Metal Piling Tips should be on a separate page, with the same information as above.

502 Piling

- Sheet Piling is accepted by COC and Mill Tests Reports. File copies of each stating that the materials meet the specifications, and list the heat numbers, reference the mill test reports that are attached, and that the material is acceptable for use.
- Reinforced Sheet Metal Piling Tips should be approved by the Soils & Geotech Program of the Materials and Geotechnical Branch at CDOT, document this acceptance.

503 Drilled Caissons

- Concrete should be documented same as Item 601 of the Schedule.
- Reinforcing materials should be documented same as Item 602 of the Schedule.

504 Cribbing

- Steel Cribbing should be accepted by CTR and Mill Tests. Document that material is acceptable and file all appropriate test results.
- Concrete Cribbing should be documented same as Item 601 of the Schedule.
- Timber Cribbing should be documented same as Item 508 of the Schedule.

504 Mechanically Stabilized Earth (MSE) Wall

- Have the following sections to delineate the acceptance of the wall.
 - Foundation Soils should be submitted to the Central Laboratory for Direct Shear, Friction Angles, and possibly Moisture / Density Curves. File test results for each type of material that is encountered. THIS SHOULD BE DONE RIGHT AWAY, AND BEFORE WALL IS BEING BUILT.
 - Other Tests results should be recorded similar to Item 203, if applicable.
 - Structure Backfill should be documented the same as Item 206.
 - Reinforcing Elements are accepted by COCs.
 - Facing Elements are accepted by COCs.
 - Treated Timbers should be documented per Item 508 of the Schedule.
 - All other miscellaneous items should be documented as applicable.

506 Rip Rap

- Test and record the specific gravity of the material, document that material was tested and indicate general sizes and other applicable information.
- Bed Course Materials follow Item 206 instructions.
- Gabions and Slope Mattress are COC accepted. Document that the material is acceptable.
- Concrete and Reinforced Concrete, follow the Item 601 and 602 instructions.

507 through 518

- Follow the applicable directions for each item for documentation.

601 Structural Concrete

- Mix Design Review Sheet (#1188), the approved mix designs should be filed behind the copy of the Form #1188.
- Form #1373, Concrete Mix Design Report. Attach changes and approvals.
- Form #82s with the 28 day (or 56 day if applicable) compressive or flexural strength test results recorded on the CDOT Form #192 attached.
- Form #156s Signed by Project Engineer
- Document for curing compound, water, and other incidental items.
- Price Reductions and explanations of deviations.
- Copy of the Structural Concrete Pre-Pour Conference agenda.

Do this for each class of concrete (i.e., Class B, D, etc.)

602 Reinforcing Steel

- Reinforcing Steel is accepted by COC and Mill Tests Reports. File copies of each stating that the materials meet the specifications, and list the heat numbers, reference the mill test reports that are attached, and that the material is acceptable for use.
- Reinforcing Steel, Buy America.
- Test Reports from Central Lab, Form #1372.

607 Fences

Follow applicable directions for each sub-category as it is listed in the Field Materials Manual.

- For Masonry Sound Barrier Walls, call HQ or designer for copies of the Universal Building Code sections covering the requirements for testing and sampling masonry walls. File test reports behind applicable forms relating to each test. (I.E. Prisms, grout, and mortar).

641 Shotcrete

- Mix Design Review Sheet (#1188), the approved mix designs should be filed behind the copy of the Form #1188.
- Form #1373, Concrete Mix Design Report.
- Form #82s with the 28 day compressive test results recorded on the CDOT Form #192 attached.
- Form #156s Signed by Project Engineer.
- Document for curing compound, water, and other incidental items.
- Form #276 report of concrete placed.
- Price Reductions and explanations of deviations.
- Copy of the Contractor's Quality Control Plan.

- Document if pre-bagged.

NOTE 1: File the remaining Items by Item Number. Use the Field Materials Manual to determine what paperwork is appropriate for that item. Any items not listed above should have adequate explanation in the Field Materials Manual.

NOTE 2: The “Special Notice to Contractors” describes in detail what is needed on both the COC and CTR. Look at this Notice to determine if a COC or CTR is the applicable acceptance method.

ATTENTION!

All of the referenced CDOT Materials Forms, except those indicated as “*computer output*”, have been revised in 2015. All of these forms state: *Previous editions are obsolete and may not be used*. The use of Materials Forms older than what is indicated in Appendix O of the FMM is not authorized!

The examples of completed forms will be revised in 2016 with the issuance of the 2017 FMM.

COLORADO DEPARTMENT OF TRANSPORTATION MATERIALS DOCUMENTATION REQUEST	Project No. IM 0253-151	Project Code (SA#) 11925
	Region 4	Date 10/5/02
	Proj. location I-25, SH 7 to WCR 16	

To: **Fidel Gonzales** Address: **1050 Lee Hill rd.**
Boulder, Co.
80302

Upon reviewing the above project for Materials Certification purposes, during the Finals Materials Documentation Checking Procedure, the following items were found to have shortages in materials documentation. Please review these shortages and reply by **10/10/02**.

Please return the original Form #211, for tracking purposes, with the missing documentation by **11/15/02**.

Item	Description	Materials documentation needed	Date received
203	Form # 212	Field Report on Compaction of Earthwork	

Signed Rose Mc Donald	Title E.I.T. III	Date 10/5/02
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- Distribution:**
- ☐ Resident Engineer
 - ☐ Project Engineer
 - ☐ Project Tester
 - ☐ Materials Project Files

CDOT Form #211 3/04

COLORADO DEPARTMENT OF TRANSPORTATION QUALITY ASSURANCE SAMPLING CHECKLIST	Contract No.	IM0761-208	Region	6	Contract ID	C18025
	Contract Location	I-76 FROM FEDERAL TO I-25				
	Contractor	BRANNAN SAND AND GRAVEL, LLC				
			Award Date	04/19/2012	Ad Date	03/01/2012
					Field Materials Manual Year	2012

SM Report 250 Revision Date 08/04/2014 Production
 **r Refer to Frequency Guide Schedule for further Instructions.
 Date Printed 5/6/2015 Page 1 of 22

Project	Item Code	Item Description	Item Unit	Quantity Reported to Date	Quantity Authorized to Date	Total Installed Quantity						
18025-BID	I-76:FEDERAL TO I-25	Material Description	Material Unit	Conversion Factor		Tests Completed Tests to Date						
		Test Method	Sample Type / Rate / Frequency No.	Plan + CO Qty	Estimated Required Tests		Required Tests to Date	Sampled Tests to Date				
		Number of tests on this row based on summed quantity:										
				Total Plan + CO Quantity	Estimated Total Required Tests	Required Total Tests to Date	Sampled Total Tests to Date					
						Estimated Total Tests Remaining	Completed Total Tests to Date					
18025-BID	203-000060	Embankment Material (Complete In Place)	CY	1.0000	CY	0.00						
18025-BID	203.03.01.01	Embankment, Soil										
		CP21	CP21 Mechanical Analysis of Soils	QA	γ*	250.00	1	1	0	1	0	-1
						250.00						
		CP23	CP23 Max Dry Density & Opt Moisture of Soil-Rock Mixture	QA	γ*	250.00	1	1	1	0	1	0
						250.00						
		CP25	CP25 % Relative Compaction of Soils & Soil-Rock Mixtures	QA	γ*	250.00	1	1	0	1	0	-1
18025-BID	203.03.01.01					250.00						
		CP80	In-Place Dens - Moisture of Soil - Soil-Agg; Nuclear Method	QA	1/2000	250.00	1	0	0	1	0	0
18025-BID	203.03.01.01					250.00						
		CPL3101	R-Value & Expansion Pressure of Soils or Agg.; Hvemr Stab.	QA	γ*	250.00	1	1	0	1	0	-1
18025-BID	203.03.01.01					250.00						
						250.00						

COLORADO DEPARTMENT OF TRANSPORTATION		Contract No. IM0761-208	Region 6	Contract ID C18025
Certification Checklist		Contract Location I-76 FROM FEDERAL TO I-25	Award Date 04/19/2012	Ad Date 03/01/2012
		Contractor BRANNAN SAND AND GRAVEL, LLC	Field Materials Manual Year 2012	

SM Report CERT Revision Date: 03/6/2015

* Refer to Frequency Guide Schedule for further instructions.

18025-BID I-76 FEDERAL TO I-25

Page 1 of 7
Date Printed 5/6/2015

Project	Item Code	Item Description	Material Unit	Conversion Factor	Total Plan + CO Quantity	Special Instructions	Quantity Reported to Date	Producer/Supplier Name	Req'd Number of Certs	Certs Received to Date	Certs (+/-) to Date
18025-BID	207-00205	Topsoil	CY		600.00		325.00		325.00		
	207-02.01.00	Topsoil	CY	1.0000							
	CERT	CERT Document COC or CTR	COC								
18025-BID	208-00034	Gravel Bag	LF		0035		88.00		88.00		
	208-02.19.00	Erosion Control, Gravel Bag, Fabric	LF	1.0000							
	CERT	CERT Document COC or CTR	COC								
					0040				1	0	1
18025-BID	208-00052	Storm Drain Inlet Protection (Type 2)	LF		100.00		0.00		0.00		
	208-02.08.01	Erosion Control, Storm Drain Inlet Protection	EACH	1.0000							
	CERT	CERT Document COC or CTR	COC								
					0050				1	0	1
18025-BID	210-01130	Reset Guardrail Type 3	LF		25.00		0.00		0.00		
	210-05.01.00	Guardrail, W Beam Rail, Galvanized	LF	1.0000							
	CERT	CERT Document COC or CTR	COC								
					0320				1	0	1
18025-BID	212-00006	Seeding (Native)	ACRE		2.00		1.80		1.80		
	212-06.01.00	Seed, Native	ACRE	1.0000							
	CERT	CERT Document COC or CTR	COC								
					0075				1	0	1
18025-BID	212-00032	Soil Conditioning	ACRE		2.00		1.80		1.80		
	212-02.02.00	Soil Conditioning	ACRE	1.0000							
	CERT	CERT Document COC or CTR	COC								
					0080				1	0	1
18025-BID	216-00201	Soil Retention Blanket (Straw-Coconut) (Biodegradable CI	SY		6833.00		6100.00		6100.00		

COLORADO DEPARTMENT OF TRANSPORTATION
INDEPENDENT ASSURANCE
SAMPLING CHECKLIST

Contract No.	IM0761-208	Region	6	Contract ID	C18025
Contract Location	I-76 FROM FEDERAL TO I-25				
Contractor	BRANNAN SAND AND GRAVEL, LLC	Award Date	04/19/2012	Ad Date	03/01/2012
				Field Materials	Manual Year
					2012

SM Report 379 Revision Date 08/04/2014 Production

Page 1 of 9

* / Refer to Frequency Guide Schedule for further instructions.

Date Printed 5/6/2015

Project	Item Code	Item Description	Material Unit	Conversion Factor	Item Unit	Quantity Reported to Date	Quantity Authorized to Date	Total Installed Quantity					
18025-BID	Mat Code	Material Description	Material Unit		Special Instructions								
		Test Method	Sample Type	Rate / Frequency	Line Item No.	Plan + CO Qty	Estimated Required Tests	Required Tests to Date	Sampled Tests to Date	Estimated Tests Remaining	Completed Tests to Date	Tests (+/-) to Date	
		Number of tests on this row based on summed quantity:											
		Total Plan + CO Quantity											
18025-BID	I-76: FEDERAL TO I-25												
		203-00060	Embankment Material (Complete In Place)	CY	1.0000								
		203.03.01.01	Embankment, Soil	CY									
		CP80	In-Place Dens - Moisture of Soil - Soil-Agg: Nuclear Method	IAT 1/100000	0540	1	0	0	1	0	0		
203.03.01.02	Embankment, Rock												
		CP80	In-Place Dens - Moisture of Soil - Soil-Agg: Nuclear Method	CY									
18025-BID	304-06007	Aggregate Base Course (Class 6)	CY	84.00	84.00	84.00	84.00	84.00	84.00	84.00	84.00	84.00	
		703.03.06.00	Aggregate Base Course Class 6	TON	1.0000								
		CP31	CP31 Sieve Analysis of Aggregates	IAT 1/100000	0101	110.00	1	1	1	0	1	0	-1
				IAT 1/100000		110.00	1	1	1	0	1	0	-1

COLORADO DEPARTMENT OF TRANSPORTATION		Contract No. IM 0701-220	Region 3	Contract ID C19848
Final Materials Documentation and Checklist		Contract I-70 FROM MP 88.5 TO 97		
Location				
<p>The Independent Assurance Sampling Schedule for this project has been substantially followed and the test results of the IA samples are in reasonably close agreement with the project acceptance (QA) sample test results. Exceptions to this statement have been previously commented on and documented when the test results were reported or are explained on an attached sheet.</p> <p>Independent Assurance (IA) samples were tested with independent equipment unless noted in Explanation of Exceptions, see attached.</p>				
(circle one)	<p>Method of Acceptance for Item 403</p> <p>IA Summary Report (Report #379), IA Explanation of Exceptions is attached</p> <p>Project Materials Lab Inspected by: (per CP 10) _____ Date: _____</p> <p>Final IA Review (by Region Materials Engineer)</p> <p>Name, printed _____ Title _____</p>			<p>Checked by (circle one)</p> <p>YES NO</p> <p>YES NO</p> <p>YES NO</p>
Prepared by signature	<p>Signed by RME</p> <p>Signature _____ Date _____</p>			Checked by signature
Date:	<p>Completed and signed by tester</p> <p>Signature _____ Date _____</p>			Date:
(circle one)	<p>As Completed Report 250/Quality Assurance Sampling Checklist and Report Cert/Certification Checklist</p> <p>Random Sampling Schedules (as completed for all required elements) are attached.</p> <p>Quality Control Notebooks for HMA & PCCP (per CP 12A & 12B) are attached.</p> <p>Buy America Certificates are attached.</p> <p>Pavement Structural Design Data Window is complete. (replaces the Roadway Surface Accomplishment Report (RSAR))</p> <p>Final Materials Documentation Review (by Project Engineer)</p> <p>Name, printed _____ Title _____</p>			<p>Checked by (circle one)</p> <p>YES NO</p> <p>YES NO NA</p> <p>YES NO NA</p> <p>YES NO NA</p>
Prepared by signature	<p>Completed and signed by cross checker</p> <p>Signature _____ Date _____</p>			Checked by signature
Date:	<p>Signed by Project Engineer</p> <p>Signature _____ Date _____</p>			Date:

Explanation of Exceptions

Explanation of Exceptions with all required supplemental documents are attached.

Prior Reduction Calculations with supporting documentation are attached.

This is to Certify that: The results of the tests on the acceptance samples indicate that the material incorporated in the construction work, and the construction operations controlled by sampling and testing, were in conformity with the approved plans and specifications; and such results compare favorably with the results of the Independent Assurance sampling and testing. This document is complete, includes all attachments, and has been reviewed and accepted.

Project Engineer	Name, printed	Title
Signature _____ Date _____		

Resident Engineer	Name, printed	Title
Signature _____ Date _____		

Distribution

o: Resident Engineer (Included with Final Documentation)

xc: Region Materials Engineer

Region Finals Engineer

FHWA Division Administrator

Documentation Unit, Materials & Geotechnical Branch

Central Files

SM Report 473 Revision Date 08/22/2014

Letter of Exception
18025 I-76 Federal to I25

Form 473 Page 2

No testing was performed on these materials due to small quantity

203.03.01.02 Embankment, Rock

703.03.06.00 ABC Class 6

208.02.19.00 Erosion Control, Gravel Bag, Fabric No CTR received after repeated effort

601.02.01.00 Concrete, Class B

After a failing slump test a price reduction of \$125.25 was assessed on the concrete. See attached calculations